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09/758,893	01/11/2001	Jin Li	2000.047800	8422

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George J Oehling Patent Agent
Williams Morgan & Amerson PC
10333 Richmond Ave
#1100
Houston, TX 77042-4131

EXAMINER

BRINEY III, WALTER F

ART UNIT PAPER NUMBER

2644

DATE MAILED: 07/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/758,893

Applicant(s)

LI, JIN

Examiner

Walter F Briney III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-14, 16-19, 26 and 31-38 is/are rejected.
- 7) ☒ Claim(s) 20-25 and 27-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-14, 16-17, 19, 26, 31, 32, and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cotreau (US Patent 5,671,272) in view of Misu (US Patent (5,426,695).

Claim 1 is limited to **a method to reduce false switch hook detection in a line card coupled to a subscriber loop via a ring and tip terminal**. Cotreau discloses a ring trip circuit (figure 1) coupled to a phone set (figure 1, element 18) by way of relays (figure 1, elements 16, 20). The circuit is part of a subscriber circuit that includes a SLIC (figure 1, element 24). The relays clearly select between a ringing generator (figure 1, element 12) and the SLIC. Thus, at least two modes of operation are present in the figure (i.e. **operating in a first state of the line card and operating in the second state of the line card**). The relays controllably select which state the subscriber circuit is currently operating in, and inherently require a control signal to cause them to operate (i.e. **receiving a control signal and operating in the second state of the line card in response to receiving the control signal**). As is clear from figure 1, when the relays (16, 20) are open, the ring trip detection circuitry is disabled (i.e. **disabling a switch hook detection in the line card**). When it is determined that a

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ringing voltage is to be applied to the telephone lines, the relays (16, 20) are closed and a current flows through a sensing resistor (14). The output of the resistor is coupled to a filter (46) before being applied to a decision circuit (48). The nature of analog filters causes the voltage present on the subscriber line to be stored in the filter (i.e. **storing a voltage representative of a voltage level between the ring and tip terminal in response to receiving the control signal**). Cotreau discloses applying ringing signals to a telephone line, but does not disclose a system or method for the application.

Therefore, Cotreau anticipates all limitations of the claim with the exception of **determining an initial condition of a second state of the line card**. Misu teaches applying ringing signals to a telephone line in such a way as to prevent surge voltages from adversely effecting neighboring telephone lines (column 2, lines 24-25; column 3, lines 3-11). Misu teaches that detecting a particular optimum time to apply the ring signal will prevent the effects of the surging current (i.e. **determining an initial condition of a second state of the line card**). By connecting the ringing generator to the subscriber line, an AC current is imposed on the line (i.e. **wherein the second state begins to operate from the determined initial condition**). It would have been obvious to control the ringing relays of Cotreau with the method as taught by Misu for the purpose of preventing surging currents from effecting neighboring subscriber lines.

It has been shown that Cotreau in view of Misu disclose circuitry that performs the method of claim 1, therefore, the examples given in claim 1 are sufficient for physical limitations. Thus, claims 19, 31, and 36 are rejected for the same reasons as claim 1.

Claim 2 is limited to **the method of claim 1**, as covered by Cotreau in view of Misu. Cotreau discloses **providing a ringing signal to the subscriber loop** (column 1, lines 14-18). Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 4 is limited to **the method of claim 2**, as covered by Cotreau in view of Misu. Cotreau discloses applying a ringing signal when an incoming call is detected (column 1, lines 14-18), and the relays connecting the ring generator are controlled by a control signal (i.e. **wherein receiving the control signal comprises receiving a ringing control signal**). Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 34 is rejected for the same reasons as claim 4.

Claim 5 is limited to **the method of claim 4**, as covered by Cotreau in view of Misu. Cotreau discloses ringing a telephone when an incoming call is detected (column 1, lines 14-18). Telephones can only be rung when they are currently in an idle (i.e. **standby state**). Therefore, when the second state is a ringing state, the first state is inherently a **standby state**. Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 35 is rejected for the same reasons as claim 5.

Claim 6 is limited to **the method of claim 5**, as covered by Cotreau in view of Misu. The example given in claim 1, with respect to determining the initial conditions of the second state, dealt with a ringing state (i.e. **wherein determining the initial condition of the second state includes determining the initial condition of the**

ringing state of the line card). Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 7 is limited to **the method of claim 6**, as covered by Cotreau in view of Misu. Misu teaches applying a ringing signal to the telephone line while minimizing the effects of a surging current to that line by matching the voltage level of the ringing signal to the idle voltage on the line, represented as the stored threshold level (abstract, figure 5). Effectively, the application of the ringing signal does not result in any sudden jumps in current, such that the ratio of the input current to the idle current is 1:1 (i.e. **wherein determining the initial condition of the second state comprises determining the initial condition based on a ratio of a full scale current value in the first state and a full scale current value in the second state**). Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 8 is limited to **the method of claim 2**, as covered by Cotreau in view of Misu. Cotreau discloses applying a ringing signal to a subscriber line when an incoming call is detected. The action of closing the ringing relays (figure 1, elements 16, 20) causes current to flow between the line and the ringing generator, and further results in activation of the ring trip detector (i.e. **further activating the switch hook detection in the line card in response to providing the ringing signal**) (figure 1, element 14). Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 9 is limited to **the method of claim 1**, as covered by Cotreau in view of Misu. Cotreau discloses activating the ringing generator relays (figure 1, elements 16, 20), but does not disclose when to deactivate them. Therefore, Cotreau in view of Misu

makes obvious all limitations of the claim with the exception **wherein receiving the control signal comprises receiving a control signal to stop ringing providing that ring trip has not occurred**. The examiner takes Official Notice of the fact that when a calling party hangs up before a called party answers, halting of the ringing function is well known. It would have been obvious to one of ordinary skill in the art at the time of the invention to disconnect the ringing generator when a calling party hangs up to prevent a called subscriber from being rang forever, even after the caller elected to discontinue the connection attempt.

Claim 26 is rejected for the same reasons as claim 9.

Claim 10 is limited to **the method of claim 9**, as covered by Cotreau in view of Misu. Cotreau discloses operating in a ringing state (i.e. **wherein operating in the first state comprises operating in a ringing state of the line card**), however, changing the first state to the ringing state means that the following limitations from claim 1 must be readdressed: **determining an initial condition of a second state of the line card; and wherein the second state begins to operate from the determined initial condition**. If the first state is a ringing state, then the second state becomes active when a phone is taken off-hook, or becomes idle when a caller places their phone on-hook. In either case, the ringing signal must be removed from the subscriber line. Such a procedure is outlined in Cotreau. By much of the same techniques as the ringing signal application, the ringing signal is removed by comparing it to a stored value, the value indicating the prime time to remove the signal to prevent current surges (abstract). Thus, the comparison of the signal corresponds to **determining an initial condition**,

while removing the AC ringing signal signals the **beginning of operating from the determined initial condition**. Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 11 is limited to **the method of claim 10**, as covered by Cotreau in view of Misu. Cotreau in view of Misu teaches operating in either **a standby state or an active state of the line card**, as shown in claim 10. Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 12 is limited to **the method of claim 11**, as covered by Cotreau in view of Misu. Cotreau discloses a ring trip detector that is tuned to measuring the presence of DC current on the subscriber loop. If the subscriber remains on-hook, the current remains below a detector's threshold (i.e. **wherein determining an initial condition of the second state of the line card comprises setting the initial condition to a value less than a switch hook threshold**) (column 1, lines 18-29). Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 13 is limited to **the method of claim 12**, as covered by Cotreau in view of Misu. As shown in claim 10, when a subscriber remains on-hook and a calling party goes on-hook, the ringing current is withdrawn from the subscriber loop without affecting the ring trip detector (i.e. **wherein the second state begins to operate from the determined initial condition includes adjusting a current to the subscriber loop**). Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 14 is limited to **the method of claim 2**, as covered by Cotreau in view of Misu. Misu teaches that ringing signals should be stopped when a subscriber goes off-

hook (i.e. **wherein receiving the control signal further comprises receiving a ring trip detection signal to stop ringing**) (i.e. column 2, lines 8-16). Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 16 is limited to **the method of claim 1**, as covered by Cotreau in view of Misu. As shown in claim 10, Cotreau in view of Misu teach a **first state** being a **ringing state** and a **second state** being an **active state**. Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 17 is limited to **the method of claim 1**, as covered by Cotreau in view of Misu. Cotreau discloses a ring trip detector, when a called subscriber places their terminal into an off-hook position, the DC current flowing through the line is above the ring trip threshold (i.e. **wherein determining an initial condition of the second state of the line card further comprises setting the initial condition to a value larger than a switch hook threshold**) (column 1, lines 11-47). Furthermore, upon entering the off-hook state, the ringing generator is removed to avoid driving high-voltage AC current into the subscriber's ear (i.e. **and wherein the second state begins to operate from the determined initial condition includes adjusting a current to the subscriber loop**). Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 32 is limited to **the line card of claim 31**, as covered by Cotreau in view of Misu. Cotreau discloses a SLIC (figure 1, element 24), but does not disclose what type of SLIC to use. Therefore, Cotreau in view of Misu makes obvious all limitations of the claim with the exception **wherein the subscriber line interface circuit is a voltage-**

feed subscriber line interface circuit. The examiner takes Official Notice of the fact that voltage-feed subscriber line interface circuits used for driving subscriber loops is well known. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a voltage-feed configuration in the SLIC of Cotreau for the purpose of implementing the line card of Cotreau with a power efficient architecture.

Claim 37 is essentially the same as claim 1, as covered by Cotreau in view of Misu. However, claim 37 includes further limitations. Cotreau discloses a circuit for **determining if a ring trip occurs** (abstract). As shown in claim 9, it is well known to remove ringing after a ring trip. The circuitry of Cotreau removes ringing by actuating the relays (figure 1, elements 16, 20) from a connection with the ringing generator (12) and ring trip circuitry (14, 44, etc...) to being connected to the SLIC (24). The disconnection of the ring trip circuitry from the subscriber loop results in a **disabling of switch hook detection in response to determining that ring trip has occurred.**

Therefore, Cotreau in view of Misu makes obvious all limitations of the claim.

Claim 38 is rejected for the same reasons as claim 37.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cotreau in view of Misu and further in view of Pieters et al. (US Patent 4,837,818).

Claim 18 is limited to **the method of claim 1**, as covered by Cotreau in view of Misu. Cotreau discloses a low-pass filter (figure 1, element 46) that stores the DC output of the operational amplifier (44). A comparator further determines the hook state from the output of the filter (i.e. **wherein the value is retrievably stored**). Cotreau discloses a SLIC that presumably implements the necessary BORSCHT features,

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however, no details of the SLIC are presented between Cotreau and Misu. Therefore, Cotreau in view of Misu makes obvious all limitations of the claim with the exception of **further storing at least one of adaptive echo parameter, cancellation parameter, and filter coefficient**. Pieters teaches a SLIC (figure 1) that includes echo cancellation (figure 1, Digital Signal Processor) (column 6, lines 27-41) in the digital portion of the SLIC, echo cancellation is beneficial for transmission because even though some reflection, known as sidetone, is desirable for telephonic communications, too much reflection from a far-end hybrid (i.e. a SLIC hybrid) can severely distort received speech. Furthermore, echo digital echo cancellers inherently require **filter coefficients** for operation. It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a SLIC with a digital echo canceller as taught by Pieters for the purpose of removing echoes that can distort received speech.

Allowable Subject Matter

Claims 3, 15, 20-25, and 27-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 3 is limited to **the method of claim 2**, as covered by Cotreau in view of Misu. Cotreau disclose applying and removing a ringing signal to a subscriber line. Misu has been relied upon to teach that the application and removal of ring currents at certain intervals minimizes the effect of an inrush current to the subscriber line (column 3, lines 3-11). Even though Misu teaches that the ringing current is to be applied only

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after the ringing voltage reaches a measured value (column 3, line 64-column 4, line 17), and that the measured value is related to line voltages (column 7, lines 25-34), there is no suggestion or teaching in the prior art to update that value in response to a control signal. Therefore, Cotreau in view of Misu makes obvious all limitations of the claim with the exception **wherein the ringing signal is provided in response to the ringing signal crossing the stored voltage value**. Therefore, claim 3 is allowable.

Claim 20 is essentially the same as claim 3, and is allowable for the same reasons.

Claims 21-25 and 27-30 are dependent on claim 20, therefore, they are allowable for the same reasons.

Claim 33 is essentially the same as claim 3, and is allowable for the same reasons.

Claim 15 is limited to **the method of claim 14**, as covered by Cotreau in view of Misu. Cotreau disclose applying and removing a ringing signal to a subscriber line. Misu has been relied upon to teach that the application and removal of ring currents at certain intervals minimizes the effect of an inrush current to the subscriber line (column 3, lines 3-11). . Even though Misu teaches that the ringing current is to be removed only after the ringing voltage reaches a measured value (column 3, line 64-column 4, line 17), and that the measured value is related to line voltages (column 7, lines 25-34), there is no suggestion or teaching in the prior art to update that value in response to a control signal. Therefore, Cotreau in view of Misu makes obvious all limitations of the

claim with the exception of **stopping the ringing signal in response to the ringing signal crossing the stored voltage value**. Therefore, claim 15 is allowable.

Response to Arguments

Applicant's arguments with respect to claims 1-38, filed 15 April 2004, have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

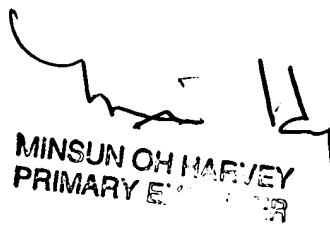
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F Briney III whose telephone number is 703-305-0347. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER